

REMARKS

Claims 12 has been amended and new claims 21-41 have been added.

Objection to Title

The examiner objected to the title of the application. A new title along the lines suggested by the examiner is submitted.

Objection to Hyperlinks in Specification

The examiner objected to the hyperlink(s) embedded in the specification at page 30, ll. 21-24. The hyperlinks have been deleted. The hyperlinks which are still available on the internet are submitted in an Information Disclosure Statement filed with this response.

New Matter Objection to the Preliminary Amendment

The examiner objected to the amendment to Tables 2 and 3 to correct g/cm^3 to read kg/m^3 . According to the examiner, the amendment adds new matter that was not supported in the original disclosure.

An amendment to the specification does not violate the new matter rule if it merely "clarifies or completes" the original disclosure. *Mackay Radio & Telegraph Co.*, 306 U.S. 72, 101 (1939). "Amendments may be made to patent applications for the purpose of curing defects, obvious to one skilled in the art, in the drawings or written descriptions of inventions." *Quigley v. Zimmerman*, 23 U.S. P.Q. 310 (C.C.P.A. 1934). An amendment only violates the rule against new matter if it adds matter "neither disclosed nor suggested" in the original specification, drawings and claims or cures a fundamental defect in the original disclosure." *Mackay Radio & Tel. Co. v. Radio Corp.*, 306 U.S.P.Q. 86, 37 U.S.P.Q. 471 (1939).

In the present case, the amendment cures a defect in the written description which is obvious to a person of ordinary skill in the art. Specifically, the amendment corrects Tables 2 and 3 to correct g/cm^3 to read kg/m^3 . A person of ordinary skill in the art will recognize that $1 \text{ g/cm}^3 = 1000 \text{ kg/cm}^3$. Hence, $\text{g/cm}^3 \times 1000 = \text{kg/cm}^3$.

An obvious discrepancy exists in the written specification. In Table 1, the Density of "Pure F1" at 15°C is said to be 0.8407 g/cm^3 . However, Table 2 reports the Density of "Pure F1" at 15°C to be 840.7 g/cm^3 . A person of ordinary skill in the art would recognize that the same material would not exhibit a 1000 magnitude difference in

density, and that the error is in the stated units. Specifically, a person of ordinary skill in the art would recognize that $1 \text{ kg/m}^3 = 0.001 \text{ g/cm}^3$. Given that the measurement of the density of F1 is 1000 times greater in Tables 2 and 3 than in Table 1, a person of ordinary skill in the art would recognize that the numbers in Tables 2 and 3 were given in kg/m^3 , not in g/cm^3 .

Applicant respectfully requests that the new matter rejection be withdrawn.

Rejection Under 35 U.S.C. § 112

The examiner rejected claims 3-8 and 13 under 35 U.S.C. § 112 as indefinite. According to the examiner, the phrase "neutral or close to neutral" is ambiguous.

-Response

The primary purpose of the requirement for claim definiteness is to ensure that the scope of the claims is clear so the public is informed of the boundaries of what constitutes infringement of the patent. A secondary purpose is to provide a clear measure of what the applicants regard as the invention so that it can be determined whether the claimed invention meets all the criteria for patentability and whether the specification meets the criteria of 35 U.S.C. § 112, first paragraph with respect to the claimed invention. MPEP 2173. The examiner's focus during examination of the claims for compliance with the requirement of definiteness under 35 U.S.C. § 112, second paragraph is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available. MPEP 2173.02. "When the examiner is satisfied that patentable subject matter is disclosed, and it is apparent to the examiner that the claims are directed to such patentable subject matter, he or she should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness." *Id.*, emphasis in original.

When read in context, it is clear that the claims define the patentable subject matter with a reasonable degree of particularity and distinctness. (Emphasis added). As explained in the specification:

Current commercially available compression ignition (diesel) engines tend to be optimized to run on fuels having a desired specification, in particular a density within a specified range. The blending of a standard commercial diesel base fuel with other fuel components, to modify the overall fuel properties and/or performance, can therefore have an adverse impact on the performance of the blend in the engines for which it is intended.

A further complication can arise when an engine is run on a fuel blend instead of a standard base fuel. Within the engine's fuel injection system, the fuel comes into contact with a range of elastomeric materials, in particular fuel pump seals. In use, many of these elastomers swell on contact with diesel fuel to an extent which depends on the chemistry of the fuel, aromatic fuel components and oxygenates serving for instance to promote swelling.

New elastomers in a fuel injection system tend to equilibrate with a uniform fuel diet and can thus provide with reasonable consistency the required level of sealing. They become vulnerable, however, if a change in fuel diet causes any significant change in the degree of elastomer swell. In the worst cases a mixed fuel diet can stress the elastomeric components of an engine to such an extent that fuel leakage results. By way of example, inclusion of RME in a diesel fuel blend may cause an increase in elastomer swell and in cases engine seal failure.

For the above reasons, it is desirable for any diesel fuel blend to have an overall specification as close as possible to that of the standard commercially available diesel base fuels for which engines tend to be optimized. For example it is desirable that the density of the blend be as close as possible to that of the optimal base fuel. In other words, the blend is ideally "neutral", or as near to neutral as possible, with respect to the relevant base fuel property.

Specification, p. 2, l. 4- p. 3, l. 6 (emphasis added).

The specification explains that,

It has now been found that certain diesel fuel blends can be formulated to mimic more closely the properties and/or performance of a standard diesel fuel. In particular it has been discovered that a diesel base fuel can be blended with certain combinations of fuel components to achieve an overall fuel composition having not only a neutral or close to neutral density compared to the base fuel alone, but also neutral or close to neutral elastomer swell effects and/or neutral or better emissions (in particular NO_x and/or particulate emissions) performance.

Specification, p. 3, ll. 24-34 (emphasis added).

Claim 1 is directed to such a fuel composition, namely to "[a] fuel composition comprising (i) a base fuel, (ii) a Fischer-Tropsch derived gas oil and (iii) one or more oxygenate" (claim 1). Claim 3 depends from claim 1 and requires components (i) and (ii) to be present in an amount effective to provide

- a) **a neutral or close to neutral *effect on elastomeric components* compared to that of the base fuel, and/or**

- b) a neutral or better *emissions performance* compared to that of the base fuel, optionally in addition to a neutral or close to neutral *density* for the composition with respect to that of the base fuel.

Claim 3 (emphasis added).

When read in context, the phrase "neutral or close to neutral" is no more indefinite than the word "about." When read in light of the foregoing teachings in the specification, a person of ordinary skill in the art would understand the meaning of the phrase "neutral or close to neutral." *BJ Services Co. v. Halliburton Energy Services, Inc.* 67 USPQ 1692 (Fed. Cir. 2003).

Applicant respectfully requests that the rejection for indefiniteness be withdrawn.

Rejection of claims Under 35 U.S.C. § 103

The examiner rejected original claims 1, 3-16, 18, and 20 as obvious over Roos et al. (Pub. No. 2002/0112466, "Roos"). The examiner contends that Roos discloses a diesel engine . . . operated by a base fuel having oxygenates, wherein the base fuel includes diesel fuel and Fischer-Tropsch fuel, which the examiner contends "intrinsically includes Fischer-Tropsch derived gas oil." According to the examiner,

[t]he difference between Roos and the presently claimed invention is the requirement that the Fischer-Tropsch derived gas oil and the oxygenate are present in an amount effective to provide:

- a) a neutral or close to neutral effect on elastomeric components compared to that of the base fuel, and/or
- b) a neutral or better emissions performance compared to that of the base fuel, optionally in addition to a neutral or close to neutral density for the composition with respect to that of the base fuel.

Office action, page 5. The examiner contends that the foregoing limitations would be "intrinsic" to the composition in Roos.

Response

In order to establish that the claims are *prima facie* obvious over the prior art, the examiner must point to two things in the prior art, and not in the applicant's disclosure-- (1) the suggestion of the invention, and (2) the expectation of its success. *In re Vaeck*, 20

U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). See also MPEP 2143. The examiner has not met this burden.

As explained in the specification:

the properties of a blend, in particular its effect on elastomeric engine components and on emissions performance, are not always straightforward to predict from the properties of the constituent fuels alone, the constituents often contributing in a non-linear fashion to the overall blend properties. The greater the number of fuel components in a blend, the less predictable its overall properties become.

Specification, p. 2, l. 4 to p. 3, l. 17.

The claims are directed to blends that have been found to "mimic more closely the properties and/or performance of a standard diesel fuel." Specification, p. 3, ll. 25-26. As explained in the specification, the blend "achieve[s] an overall fuel composition having not only a neutral or close to neutral density compared to the base fuel alone, but also neutral or close to neutral elastomer swell effects and/or neutral or better emissions (in particular NO_x and/or particulate emissions) performance." Specification, p. 3, ll. 29-34.

The examiner has not pointed to a teaching or suggestion of a fuel composition comprising the claimed **blend or combination** of components, namely "[a] fuel composition comprising (i) a base fuel, (ii) a Fischer-Tropsch derived gas oil and (iii) an oxygenate." Claim 1.

The examiner contends that the combination is taught in Roos, pointing to paragraph [0045] as describing a "base fuel [which] includes diesel fuel and Fischer Tropsch fuel." Paragraph [0045] of Roos reads as follows:

[0045] The base fuels suitable for use in the operation of spark-ignition or compression-ignition internal combustion engines or burners of the present invention include diesel fuel, jet fuel, kerosene, synthetic fuels, such as Fischer-Tropsch fuels, liquid petroleum gas, fuels derived from coal, natural gas, propane, butane, unleaded motor and aviation gasolines, and so-called reformulated gasolines which typically contain both hydrocarbons of the gasoline boiling range and fuel-soluble oxygenated blending agents, such as alcohols, ethers and other suitable oxygen-containing organic compounds. Oxygenates suitable for use in the present invention include methanol, ethanol, isopropanol, t-butanol, mixed C₁ to C₅ alcohols, methyl tertiary butyl ether, tertiary amyl methyl ether, ethyl tertiary butyl ether and mixed ethers. Oxygenates, when used, will normally be present in the base fuel in an amount below about 25% by volume, and preferably

in an amount that provides an oxygen content in the overall fuel in the range of about 0.5 to about 5 percent by volume.

The examiner has not pointed to a teaching or suggestion of a “Fischer Tropsch-derived gas oil” in Roos. The examiner therefore has not pointed to a teaching of suggestion of the claimed invention in Roos. The examiner attempts to meet the burden to point to such a teaching or suggestion by contending that “the Fischer Tropsch fuel intrinsically includes Fischer Tropsch-derived gas oil.” Office action, page 5.

It is legally incorrect for the examiner to simply assume that Roos inherently teaches or suggests a “Fischer Tropsch-derived gas oil” and then argue that a case of *prima facie* obviousness has been made based on that assumption. “[T]he examiner’s assumptions do not constitute the disclosure of prior art.” *In re Rijckaert*, 9 F.3d 1531, 1533-34, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1998).

Since the examiner attempts to meet the burden on the grounds that “Fischer Tropsch-derived gas oil” inherently or intrinsically is taught by Roos, then the examiner has a heavy burden—one which the examiner clearly has not met. The examiner has not provided any basis in fact and/or technical reasoning to reasonably support a determination that Fischer Tropsch-derived gas oil necessarily flows from Roos’ teaching of “Fischer Tropsch fuel” as a suitable “synthetic fuel” for use as base fuel. “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be recognized by persons of ordinary skill.’” [Citations omitted.] *In re Robertson*, 49 U.S.P.Q.2d 1949, 1951 (Fed. Cir. 1999). “Inherency . . . may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Id.*, citations omitted. “In relying upon a the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” MPEP 2112.

The examiner has not provided a basis in fact or technical reasoning to establish that Roos necessarily teaches “[a] fuel composition comprising (i) a base fuel, (ii) a Fischer-Tropsch derived gas oil and (iii) an oxygenate.”

The phrase “Fischer Tropsch fuels” encompasses any number of compounds, many of which are not necessarily gas oil. At least one well known reference defines “Fischer-Tropsch synthesis” as follows: Synthesis of hydrocarbons, aliphatic alcohols, aldehydes, and ketones by the catalytic hydrogenation of carbon monoxide using enriched synthesis gas from passage of steam over heated coke. The ratio of products varies with conditions.” Hawley’s Condensed Chemical Dictionary (14th Ed. 2001), p. 499 (copy attached). In contrast, “gas oil” is defined as “[a] liquid petroleum distillate with viscosity and boiling range between those of kerosene and lubricating oil. Boiling range 232-426C, flash p. 150F (65.5kC), autoign temp 640F (337C). Combustible.” Hawley’s Condensed Chemical Dictionary (14th Ed. 2001), p. 527 (copy attached). **Contrary to the examiner’s contention, Roos’ mention of “Fischer-Tropsch fuels” as suitable “synthetic fuels” is not necessarily a teaching of a “Fischer Tropsch-derived gas oil.”**

Even if one assumes for purposes of argument only that Roos’ mention of “Fischer-Tropsch fuels” as suitable “synthetic fuels” was a teaching of a “Fischer Tropsch-derived gas oil”--which Applicant expressly denies-- the examiner has not pointed to a teaching or suggestion in Roos or in any other cited reference to **combine** “(i) a base fuel, (ii) a Fischer-Tropsch derived gas oil and (iii) an oxygenate” to produce a fuel composition. The recited listing of “base fuels” is not a teaching or suggestion specifically to **combine** fuels on the list. The recited listing of “base fuels” certainly is not a teaching or suggestion to specifically combine “(i) a base fuel, (ii) a Fischer-Tropsch derived gas oil and (iii) an oxygenate.” And, with respect to claims 27-41, the recited listing is not a teaching or suggestion specifically to combine “(i) a **diesel** fuel, (ii) a Fischer-Tropsch derived gas oil and (iii) an oxygenate” Claim 27.

The examiner cannot establish *prima facie* obviousness merely by arguing that a combination comprising “(i) a base fuel, (ii) a Fischer-Tropsch derived gas oil and (iii) an oxygenate” could be derived by modifying Roos to incorporate something not taught or suggested by Roos, itself, or by another cited reference. In order to establish a case of

prima facie obviousness, the examiner has the burden to point to a teaching or suggestion in the references themselves that it would be desirable to make the modification(s) required to produce the claimed composition (and method). MPEP 2143.01; *In re Brouwer*, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1995).

The examiner has not pointed to a teaching in Roos or in another cited reference that would motivate a person of ordinary skill in the art to modify Roos to (a) use a Fischer Tropsch derived gas oil as Roos' "Fischer Tropsch fuel" (Roos paragraph [0045]), and (2) to combine that "Fischer Tropsch derived gas oil" with the other claimed components to produce a fuel composition comprising "(i) a base fuel, (ii) a Fischer-Tropsch derived gas oil and (iii) an oxygenate." Claim 1.

The examiner certainly has not pointed to a teaching or suggestion that making the claimed selection and combination could produce the results specified in claim 3:

- a) a neutral or close to neutral effect on elastomeric components compared to that of the base fuel, and/or
- b) a neutral or better emissions performance compared to that of the base fuel, optionally in addition to a neutral or close to neutral density for the composition with respect to that of the base fuel.

Applicant respectfully requests that the examiner withdraw the rejection of claims 1, 3-16, 18, and 20 as obvious over Roos.

Claims 21-26

New claims 21-26 are directed to a fuel composition comprising "(i) a base fuel, (ii) a Fischer-Tropsch derived gas oil and (iii) one or more ester." The examiner has not pointed to a teaching or suggestion in Roos to use an ester in the claimed combination.

Paragraph [0045] of Roos states that

Oxygenates suitable for use in the present invention include methanol, ethanol, isopropanol, t-butanol, mixed C₁ to C₅ alcohols, methyl tertiary butyl ether, tertiary amyl methyl ether, ethyl tertiary butyl ether and mixed ethers. Oxygenates, when used, will normally be present in the base fuel in an amount below about 25% by volume, and preferably in an amount that provides an oxygen content in the overall fuel in the range of about 0.5 to about 5 percent by volume.

The examiner has not pointed to a teaching in Roos of an "ester."

The examiner has not pointed to a teaching or suggestion in Roos to combine (a) "a base fuel," and (b) "a Fischer-Tropsch derived gas oil" for the reasons discussed above. The examiner certainly has not pointed to a teaching or suggestion in Roos to combine an ester with a combination of both (a) a base fuel and (b) a Fischer-Tropsch derived gas oil. The examiner therefore has not pointed to a teaching or suggestion of every limitation of the new claims 21-26 in Roos or elsewhere, and has not pointed to a teaching or suggestion of the combination of components in claims 21-26 in Roos or elsewhere.

The examiner cannot establish a case of *prima facie* obviousness merely by arguing that the combination of claims 21-26 could be derived by modifying Roos to incorporate something not taught or suggested by Roos, itself, or by another cited reference. In order to establish a case of *prima facie* obviousness, the examiner has the burden to point to a teaching or suggestion in the references themselves that it would be desirable to make the modifications required to result in the claimed combination. MPEP 2143.01; *In re Brouwer*, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1995). The examiner has not met this burden for all of the reasons discussed above.

**-Rejection of claims 2, 17, and 19 as obvious over
Roos in view of Vogel and Arters**

The examiner rejected claims 2, 17, and 19 as obvious over Roos in view of Vogel and Arters. The examiner admits that Roos does not teach or suggest the use of an ester of either (i) a carboxylic acid, or (ii) a vegetable oil (claim 2). The examiner contends that Vogel teaches "an ester of a monocarboxylic or polycarboxylic acid present in motor fuel, wherein the motor fuel is used to operate diesel engines (col. 2, ll. 19-34). According to the examiner, "[i]t would have been obvious to one of ordinary skill in the art to add Vogel's ester as an oxygenate into Roos' composition because the ester solves the problem of valve stick in a highly satisfactory manner (col. 7, ll. 19-23, see also col. 4, ll. 57-68 and col. 2, ll. 7-18). Office action, page 6. The examiner contends that Arters "discloses oxygenates such as esters from vegetable oils (page 2, paragraph [0027]), and that "it would have been obvious to one of ordinary skill in the art to add or substitute

Roos' oxygenates" with Arters' vegetable oils "because it is possible to achieve control of deposits in engines (page 2, paragraph [0023])."

-Response

-Vogel

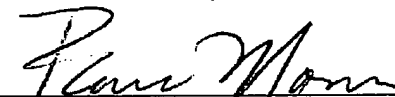
For the reasons discussed above in connection with the obviousness rejection over Roos, the examiner has not pointed to a teaching or suggestion of "[a] fuel composition comprising (i) a base fuel, (ii) a Fischer-Tropsch derived gas oil and (iii) an oxygenate." Claim 1. The examiner has not pointed to a teaching or suggestion in Vogel or in Arters that would motivate a person of ordinary skill in the art to modify Roos in the manner required to make the required combination. Claims 2, 17, and 19 depend, directly or indirectly, from claim 1 and are allowable therewith for all of the foregoing reasons.

CONCLUSION

For all of the foregoing reasons, Applicant respectfully requests entry of the amendments and allowance of all of the pending claims. The commissioner is hereby authorized to charge any additional fees or credit any overpayment to 19-1800 (File no.TS7617-US), maintained by Shell Oil Company

Respectfully submitted,
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